INTEGRATED CIRCUIT **TOSHIBA** TECHNICAL DATA

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT TA7796P, TA7796Z

SILICON MONOLITHIC

5 BAND GRAPHIC EQUALIZER

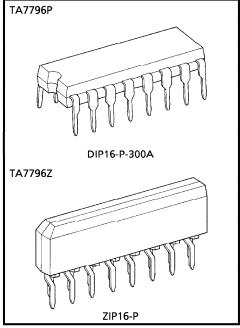
TA7796P, TA7796Z are 5-Band graphic equalizer IC, which have 5 resonance circuit and an output buffer amplifier. 5 band graphic equalizer for one channel can be formed easily by externally connecting capacitors and variable resistors which fix fo (resonance frequency). Dual inline package 16pin TA7796P Zig-Zag inline package 16pin TA7796Z

FEATURES

- Few External Parts
- Low Distortion : THD = 0.007% (Typ.) $(V_O = 0.245 \text{Vrms} (-10 \text{dBm}), f = 1.1 \text{kHz} \text{BW} = 20 \sim 20 \text{kHz},$ FLAT)
- Low Noise

: $V_{no} = 3.0 \mu V_{rms}$ (Typ.) $(R_g = 620\Omega, V_{in} = 0, BW = 20\sim20kHz, FLAT)$

• Wide Operating Supply Voltage Range : $V_{CC} = 4.0 \sim 16V \text{ (Ta} = 25^{\circ}\text{C)}$



Weight DIP16-P-300A: 1.0g (Typ.) ZIP16-P : 0.99g (Typ.)

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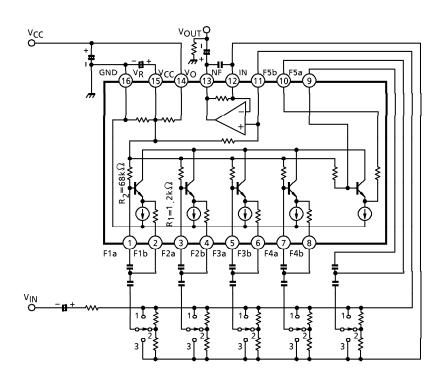
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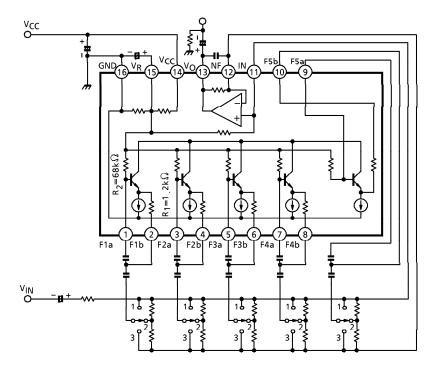
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BLOCK DIAGRAM

TA7796P



TA7796Z



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TA7796P, TA7796Z

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	Vcc	16	V
Power Dissipation	P _D (Note)	750	mW
Operating Temperature	T _{opr}	− 30~75	°C
Storage Temperature	T _{stg}	- 55∼150	°C

(Note) Derated above $Ta = 25^{\circ}C$ in the proportion of $6mW/^{\circ}C$ for TA7796P, TA7796Z.

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{CC} = 8V$, f = 1.1kHz, $R_L = 10\Omega$, $Ta = 25^{\circ}C$)

CHARACTERISTIC	SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	lccq	_	V _{in} = 0	3.5	6.1	9.3	mA
	G _V (FLT)	-	$V_{out} = 0.775V_{rms}$ (0dBm)	- 2.5	- 0.5	1.5	
		_	$V_{out} = 0.775V_{rms}$ (0dBm), f = 110Hz	10.0	11.5	14.0	
		_	$V_{out} = 0.775V_{rms}$ (0dBm), f = 340Hz	10.0	11.5	14.0	
	G _V (BST)	_	$V_{out} = 0.775V_{rms}$ (0dBm), f = 1.1kHz	10.0	11.5	14.0	
			$V_{out} = 0.775V_{rms}$ (0dBm), $f = 3.4kHz$	10.0	11.5	14.0	
Voltage Gain		_	$V_{out} = 0.775V_{rms}$ (0dBm), f = 11kHz	10.0	11.5	14.0	dB
		_	$V_{out} = 0.775V_{rms}$ (0dBm), f = 110Hz	- 14.0	- 11.5	- 10.0	
		_	$V_{out} = 0.775V_{rms}$ (0dBm), f = 340Hz	- 14.0	- 11.5	- 10.0	
	G _v (CUT)	_	$V_{out} = 0.775V_{rms}$ (0dBm), f = 1.1kHz	- 14.0	- 11.5	- 10.0	
		_	$V_{Out} = 0.775V_{rms}$ (0dBm), f = 3.4kHz	- 14.0	– 11.5	- 10.0	
		_	$V_{out} = 0.775V_{rms}$ (0dBm), $f = 11kHz$	- 14.0	– 11.5	- 10.0	
Total Harmonic	THD (FLT)		\/ .=0.245\/ (10dPm\		0.007	0.10	%
Distortion	(FLI)		V _{out} = 0.245V _{rms} (– 10dBm)	_	0.007	0.10	70
Output Noise Voltage	V _{no} (FLT)	_	$R_g = 620\Omega$, $V_{in} = 0$, $BW = 20 \sim 20 kHz$	_	3.0	8.0	μV _{rms}

TYP. DC VOLTAGE OF EACH TERMINAL

TA7796P ($V_{CC} = 8V$, Ta = 25°C)

TERMINAL No.	1	2	3	4	5	6	7	8
DC-VOLTAGE (V)	4.70	3.35	4.70	3.35	4.70	3.35	4.70	3.35
TERMINAL No.	9	10	11	12	13	14	15	16
DC-VOLTAGE (V)	4.70	3.35	4.00	4.00	4.00	8.00	4.70	0

TA7796Z ($V_{CC} = 8V$, Ta = 25°C)

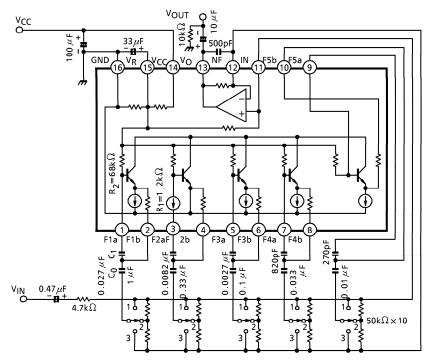
	_	_	_	_	_	_	_	
TERMINAL No.	1	2	3	4	5	6	7	8
DC-VOLTAGE (V)	4.70	3.35	4.00	4.00	4.00	8.00	4.70	0
TERMINAL No.	9	10	11	12	13	14	15	16
DC-VOLTAGE (V)	4.70	3.35	4.70	3.35	4.70	3.35	4.70	3.35

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TEST CIRCUIT TA7796P

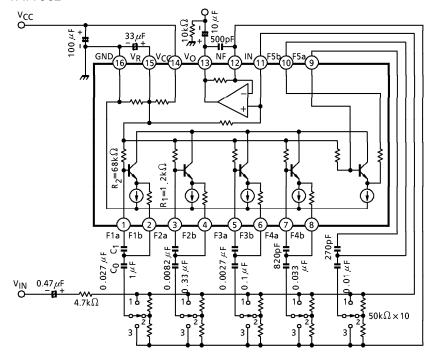


- 1 : CUT 2 : FLAT 3 : BOOST
- fo (Resonance Frequency)

$$\begin{split} f_{O} = & \frac{1}{2\pi \sqrt{C_{0} \cdot C_{1} \cdot R_{1} \cdot R_{2}}} \\ \begin{pmatrix} R_{1} = 1.2 k\Omega, & R_{2} = 68 k\Omega, \\ \text{on chip resistor} \end{pmatrix} \end{split}$$

C ₀ (F)	C ₁ (F)	fo (Hz)
1μ	0.027μ	107
0.33 μ	0.0082μ	340
0.1μ	0.0027 μ	1.07k
0.033μ	820p	3.40k
0.01 μ	270p	10.7k

TA7796Z



- 1 : CUT 2 : FLAT 3 : BOOST
- f_O (Resonance Frequency)

$$f_{0} = \frac{1}{2\pi \sqrt{C_{0} \cdot C_{1} \cdot R_{1} \cdot R_{2}}}$$

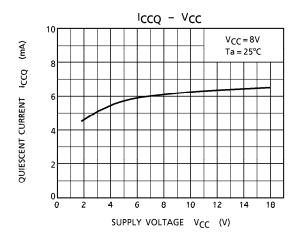
$$\begin{pmatrix} R_{1} = 1.2k\Omega, & R_{2} = 68k\Omega, \\ \text{on chip resistor} \end{pmatrix}$$

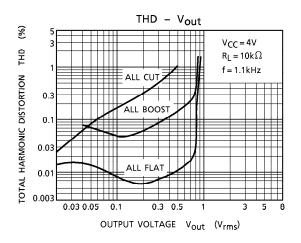
C ₀ (F)	C ₁ (F)	f _O (Hz)
1μ	0.027 μ	107
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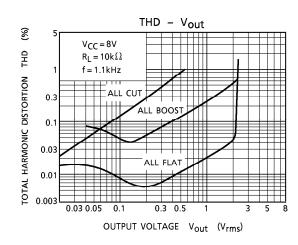
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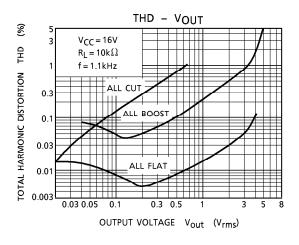
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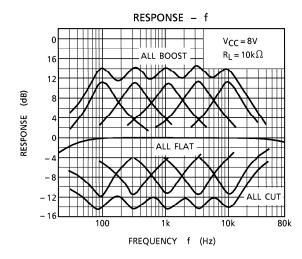
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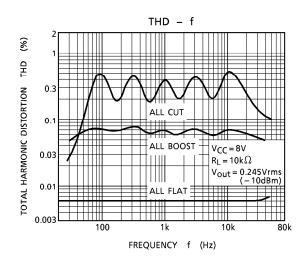








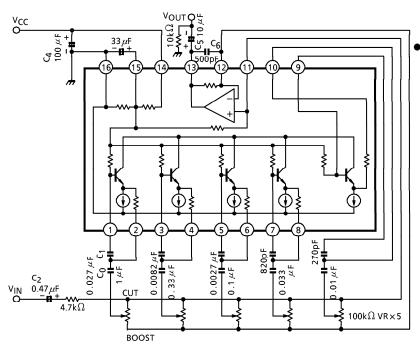




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TECHNICAL DATA

APPLICATION TA7796P



Description of external parts.

C₀, C₁: Capacitors used to fix f₀ (resonance frequency).

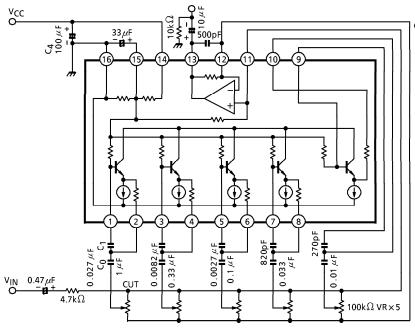
C2: Input capacitor.

C₃: Decoupling capacitor.

C₄: Power capacitor.

C₅: Output capacitor.

TA7796Z



Description of external parts.

C₀, C₁: Capacitors used to fix f₀ (resonance frequency).

C₂: Input capacitor.

C₃: Decoupling capacitor.

C₄: Power capacitor.

C₅: Output capacitor.

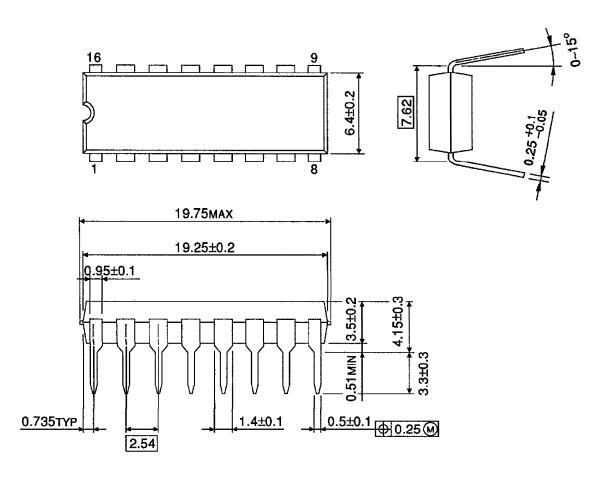
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Weight: 1.0g (Typ.)

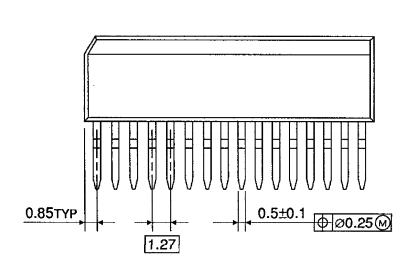
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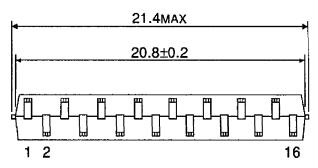
TECHNICAL DATA

TA7796P, TA7796Z

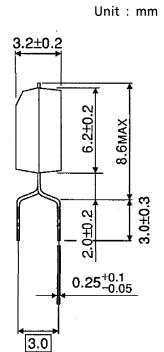
OUTLINE DRAWING

ZIP16-P





Weight: 0.99g (Typ.)



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